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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,896	01/29/2002	Saeid Seydnejad	9-13528-172us	3693

20988 7590 07/13/2005

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EXAMINER	
CURS, NATHAN M	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/057,896	SEYDNEJAD ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,7-14 and 18-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7-12,14 and 18-23* is/are rejected.

7)☐ Claim(s) *13 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 8-10, 14, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts (US Patent No. 5,513,029) in view of Wang et al. ("Wang") ("Performance limitations imposed by stimulated Raman scattering in optical WDM SCM video distribution systems," Wang et al.; IEEE Photon. Technol. Lett., vol 7, pp. 1492-1494, Dec. 1995).

Regarding claims 1 and 14, Roberts discloses a method of monitoring optical performance of a Dense Wave Division Multiplex (DWDM) optical communication system, and an optical performance monitor, respectively, in which a plurality of channels are multiplexed within an optical fiber (col. 3, lines 4-6 and col. 4, lines 4-6), comprising: receiving means for receiving an aggregate optical signal containing an optical data signal transported through a respective one of the channels (col. 3, lines 30-31 and col. 4, lines 26-28), the optical data signal being modulated by a respective predetermined spreading code (col. 3, lines 6-8, lines 39-44, col. 4, lines 6-11, lines 45-46, and col. 11, lines 1-6); detecting means for detecting a modulation power of the respective predetermined spreading code (col. 4, lines 11-16 and lines 18-22); and estimating an optical power of the optical data signal using the detected modulation power of the predetermined spreading code (col. 4, lines 11-16 and lines 37-40). Aside from the inherent dispersion of the transmission fiber, Roberts does not disclose imposing a wavelength-

dependent delay on the received aggregate optical signal using an optical delay filter. Wang discloses WDM with sub-carrier multiplexing and that increasing fiber dispersion lowers wavelength-dependent SRS crosstalk effects (page 1492, Introduction section and 1493, col. 2, lines 1-5). It would have been obvious to one of ordinary skill in the art at the time of the invention to add fiber dispersion to the system of Roberts to lower wavelength-dependent SRS crosstalk between the dither signals carried on different wavelengths.

Regarding to claim 2, the combination of Roberts and Wang teaches that the predetermined spreading code is unique across all of the channels multiplexed within the fiber (Roberts: col. 3, lines 39-51, col. 4, lines 18-22, col.10, lines 63-67 and col. 11, lines 1-6).

Regarding claim 3, the combination of Roberts and Wang also discloses that the predetermined spreading code comprises a spectrally white bit sequence having a predetermined chip duration (Roberts: col. 3, lines 39-41, and col. 11, lines 1-6; it is inherently known that a pseudorandom sequence must have a predetermined chip duration).

Regarding claims 8 and 19, the combination of Roberts and Wang further teaches optical performance monitor detecting means detecting a modulation power of the predetermined spreading code, comprising: converting the aggregate optical signal into a corresponding electrical signal (Roberts: col. 4, lines 32-37); decomposing the electrical signal into the predetermined spreading code of the optical signal (Roberts: col. 3, lines 39-43 and col. 4, lines 32-37); and measuring an amplitude of the decomposed electrical signal (Roberts: col. 3, lines 32-43, col. 4, lines 32-51).

Regarding claims 9 and 20, the combination of Roberts and Wang discloses the optical performance monitor detecting means decomposing the electrical signal, comprising: multiplying the electrical signal by the predetermined spreading code (Roberts: col. 3, lines 39-43 and col. 4, lines 32-37, col. 10, lines 58-67 and col. 11, lines 40-49, where the step of multiplying the

electrical signal by the predetermined spreading code is inherently understood as the decoding step for the pseudorandom sequence by digitally correlating the tapped optical signal with each candidate pseudorandom sequence).

Regarding claims 10 and 21, the combination of Roberts and Wang also discloses that the aggregate optical signal is received at a downstream end of the optical fiber, and the estimated optical power of the optical data signal is indicative of gain/attenuation experienced by the optical data signal within the fiber (Roberts: col. 3, lines 15-29, lines 63-67, and col. 4, lines 1-3, lines 25-31).

3. Claims 11-13, 22, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts (US Patent No. 5,513,029) in view of Wang ("Performance limitations imposed by stimulated Raman scattering in optical WDM SCM video distribution systems," Wang et al.; IEEE Photon. Technol. Lett., vol 7, pp. 1492-1494, Dec. 1995), as applied to claims 1-3, 8-10, 14, 19-21 above, and further in view of Lemus et al. ("Lemus") (US Patent No. 6,111,676).

Regarding claims 11 and 22, the combination of Roberts and Wang discloses all the aspects of the claimed invention as set forth in the rejection to claims 1 and 14 above, except fails to teach that the aggregate optical signal is received as a reflected signal at an upstream end of the optical fiber, and the estimated optical power of the optical data signal is indicative of a reflection of the optical data signal in an upstream direction of the fiber.

However, Lemus teaches a method for detecting reflections in bidirectional multi-channel communication systems, wherein the optical signal is received as a reflected signal at an upstream end of the optical fiber (see Fig. 1 and col. 2, lines 15-21), and the estimated optical power of the optical signal is indicative of a reflection of the optical signal in an upstream direction of the fiber (col. 2, lines 15-21).

One skilled in the art would have recognized that it is easy to adapt the method of Lemus that detects reflections in bidirectional multi-channel communication systems using the measured optical power of a reflected signal to the method of monitoring optical performance of the combination of Roberts and Wang since they both provide tapping unit and performance monitoring unit at an upstream end of the optical fiber, and since such method has an advantage of determining faults in an optical link and can prevent oscillations in bidirectional optical transmission system. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the method of detecting reflections in bidirectional multi-channel communication of Lemus to modify the method for monitoring performance of optical transmission systems of the combination of Roberts and Wang to provide a more reliable performance monitoring for the optical transmission systems.

Regarding claims 12 and 23, the combination of Roberts and Wang discloses all the aspects of the claimed invention as set forth in the rejection to claims 1 and 14 above, except fails to teach a step of estimating a distance to a point of reflection.

However, Lemus discloses a step of estimating a distance to a point of reflection (col. 2, lines 23-27).

One skilled in the art would have recognized that it is advantageous to incorporate the method of Lemus for detecting reflections in bidirectional multi-channel communication systems into the system of optical performance monitoring of the combination of Roberts and Wang, since they both provide tapping unit and performance monitoring unit at an upstream end of the optical fiber, to further estimate the distance to a point of reflection based on the relative delay between the signal and the respective reflection in order to determine the location of the reflection without using expensive fixed or tracking optical filters. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the

method of detecting reflections in bidirectional multi-channel communication of Lemus to modify the method for monitoring performance of optical transmission systems of the combination of Roberts and Wang to provide a simple faults detection system for the optical transmission systems.

4. Claims 7 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts (US Patent No. 5,513,029) in view of Wang ("Performance limitations imposed by stimulated Raman scattering in optical WDM SCM video distribution systems," Wang et al.; IEEE Photon. Technol. Lett., vol 7, pp. 1492-1494, Dec. 1995), as applied to claims 1-3, 8-10, 14, 19-21 above, and further in view of Lovell et al. ("Lovell") (US Patent No. 5,349,606).

Regarding claims 7 and 18, the combination of Roberts and Wang differs from claims 7 and 18 in that Roberts does not disclose that a difference between respective delays of any two channels is equivalent to at least one spreading code chip duration.

However, Lovell discloses a corresponding time delayer providing time offset equivalent to at least one spreading code chip duration (col. 1, lines 38-58).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the specific time delays of Lovell into the optical monitoring performance system of the combination of Roberts and Wang in order for each channel to have a relatively stable delay to make the copy of each spreading code be synchronized with its counterpart in the received signal.

Allowable Subject Matter

5. Claims 13 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to claims 1-12 and 14-23 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

8. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

M. R. Sedighian

M. R. SEDIGHIAN
PRIMARY EXAMINER